**Supplementary material to the manuscript: The efficacy of psychological interventions for PTSD in children and adolescents exposed to single vs. multiple traumas.
Meta-analysis of randomized controlled trials**

 **Appendix A. Search strategy**

**Appendix B. References of screened related review articles**

**Appendix C. Characteristics of included trials**

**Appendix D. References of included trials**

**Appendix E. Trial quality of included trials**

**Appendix F. Forest plots depicting the efficacy of trauma-focused cognitive behavior therapy vs. passive control conditions at treatment endpoint in samples exposed to a single trauma (top) or multiple traumas (bottom)**

**Appendix G. Forest plots depicting the efficacy of trauma-focused cognitive behavior therapy vs. other psychological interventions at treatment endpoint in samples exposed to a single trauma (top) or multiple traumas (bottom)**

**Appendix H. Sensitivity analysis1: Efficacy of psychological interventions for pediatric PTSD for single vs. multiple trauma trials at posttreatment**

**Appendix I. Long-term efficacy of psychological interventions for pediatric PTSD in samples exposed to a single trauma vs. multiple traumas**

**Appendix J.** **Trial quality as a potential moderator of short-term efficacy of psychological interventions for pediatric PTSD in samples exposed to a single trauma vs. multiple traumas**

**Appendix A. Search strategy**

|  |  |
| --- | --- |
| Databases | Search Terms |
| MEDLINE and PsycINFO | ( TI ( ptsd OR ptss OR post-traumatic stress OR posttraumatic stress OR post-traumatic syndrome OR posttraumatic syndrome) OR AB ( ptsd OR ptss OR post-traumatic stress OR posttraumatic stress OR post-traumatic syndrome OR posttraumatic syndrome ) OR SU ( ptsd OR ptss OR post-traumatic stress OR posttraumatic stress OR post-traumatic syndrome OR posttraumatic syndrome ) ) AND ( TI ( treatment\* OR intervention\* OR therap\* OR psychotherap\* OR exposure OR counse\*ing OR trial\* ) OR AB ( treatment\* OR intervention\* OR therap\* OR psychotherap\* OR exposure OR counse\*ing OR trial\* ) OR SU ( treatment\* OR intervention\* OR therap\* OR psychotherap\* OR exposure OR counse\*ing OR trial\* ) ) |
| PTSDpubs | (ptsd OR ptss OR post-traumatic stress OR posttraumatic stress OR post-traumatic syndrome OR posttraumatic syndrome) AND (treatment\* OR intervention\* OR therap\* OR psychotherap\* OR exposure OR counse\*ing OR trial\*) |
| Web of Science | ALL=( ptsd OR ptss OR post-traumatic stress OR posttraumatic stress OR post-traumatic syndrome OR posttraumatic syndrome ) AND ALL=( treatment\* OR intervention\* OR therap\* OR psychotherap\* OR exposure OR counse\*ing OR trial\* ) |
| Note that the search string contains APA thesaurus/MeSH search terms (i.e., “posttraumatic stress”, “treatment”, “intervention”, “psychotherapy”, “exposure” and “counseling” as well as additional terms (e.g., “post-traumatic stress”, “PTSD”, “trial”, “therapy”) in case a particular trial was not registered under these APA thesaurus/MeSH search terms. |

**Appendix B.** **References of screened related review articles**

Al-Tamimi, S. A. G. A., & Leavey, G. [G.] (2021). Community-based interventions for the treatment and management of conflict-related trauma in low-middle income, conflict-affected countries: A realist review. *Journal of Child & Adolescent Trauma*, *15*(2), 441–450.

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Darawshy, N. A.‑S., Gewirtz, A., & Marsalis, S. (2020). Psychological intervention and prevention programs for child and adolescent exposure to community violence: A systematic review. *Clinical Child and Family Psychology Review*, *23*(3), 365–378.

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Gilbert, R., Abel, M. R., Vernberg, E. M., & Jacobs, A. K. (2021). The use of psychological first aid in children exposed to mass trauma. *Current Psychiatry Reports*, *23*(9).

Gómez, G., Basagoitia, A., Burrone, M. S., Rivas, M., Solís-Soto, M. T., Dy Juanco, S., & Alley, H. (2021). Child-focused mental health interventions for disasters recovery: A rapid review of experiences to inform return-to-school strategies after COVID-19. *Frontiers in Psychiatry*, *12*.

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Lawton, K., & Spencer, A. (2021). A full systematic review on the effects of cognitive behavioural therapy for mental health symptoms in child refugees. *Journal of Immigrant and Minority Health*, *23*(3), 624–639.

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Noll, J. G. (2021). Child sexual abuse as a unique risk factor for the development of psychopathology: The compounded convergence of mechanisms. *Annual Review of Clinical Psychology*, *17*, 439–464.

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**Appendix C. Characteristics of included trials**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Publication,****conditions &****(number of sessions)** | n | Intervention(format of delivery, parent involvement) | Trauma type | Trauma exposure freq.: single vs. multiple (mean nr of exposure) | Country | Basline PTSD rate in % (measure) | % female | outcome measure (PTSD) | Longest FU  | Age, mean or range (SD) | Analysis | Quality sum score (out of 8) |
| Ahmad et al. (2007) EMDR (8 sessions, 45 min.)WL | 1716 | EMDR(individual) | Multiple types | Multiple(n.a.) | Sweden | 100 (DICA) | 60.61 | PTSS-C | n.a. | 6–16(10.0) | ITT | 4 |
| Ahrens & Rexford (2002)TF-CBT (8 sessions, 60 min.)WL | 1919 | CPT(group) | Physical violence | Single(1) | USA | 100 (PSS-SR) | 0 | PSS-SR | n.a. | 15–18(16.4) | Compl. | 3 |
| Al-Hadethe et al. (2015)TF-CBTOtherWL | 192020 | NET (individual)EFT (individual) | War | Multiple\*(n.r.) | Iraq | 100 (SPTSS) | 0 | SPTSS | 12 | 16-19 | Compl. | 2 |
| Auslander et al. (2017)TF-CBT (10 sessions, 90 min.)TAU (n.r.) | 1510 | GAIN(group, parent involvement) | Multiple types (child welfare) | Multiple\*(n.a.) | USA | 67 (CPSS) | 100 | CPSS | r.b.i. | 12-18(14.7) | Compl. | 5 |
| Auslander et al. (2020)TF-CBT (14 sessions, 90 min)UC (n.r., n.r.)  | 115108 | CBITS (group, individual, parent involvement) | Multiple types (child welfare) | Multiple\*(n.a.) | USA | 54 (CPSS) | 100 | CPSS | 3 | 12-19(14.89) | ITT | 6 |
| Barron et al. (2016)TF-CBT (5 sessions, 60 min.)WL | 7975 | TRT(group) | War | Multiple\*(18.85) | Palestine | n.r. | 59.71 | CRIES | n.a. | 11-18(13.5) | ITT | 7 |
| Barron et al. (2020)TF-CBT (5 sessions, 90 min.)WL | 1416 | TRT(group) | Drug violence | Multiple(n.a.) | Brazil | 96.67 (CRIES) | 46.67 | CRIES | n.a. | 8-13(10.1) | ITT | 3 |
| Carrion et al. (2013)MDT (15 sessions, 50 min.)WL | 3827 | Cue-centered treatment (individual, parent involvement) | Physical violence | Multiple\*(5.03) | USA | n.r. | 40.00 | UCLA PTSD-RI | n.a. | 8–17(11.6) | ITT | 7 |
| Catani et al. (2009)TF-CBT (6 sessions, 60-90 min.)Meditation (6 sessions, 60-90 min.) | 1615 | KIDNET(individual) | Multiple types | Multiple\*(n.a.) | Sri Lanka | n.a.a (UPID) | 45.16 | UPID | 6 | 8–14(12.0) | ITT | 6 |
| Celano et al. (1996)TF-CBT (8 sessions, 60 min.)TAU (8 sessions, 60 min.) | 1517 | Recovering from abuse program(individual, parent involvement inboth conditions) | Sexual assault | Multiple\*(n.a.) | USA | n.r. | 100 | CITES-R | n.a. | 8–13(10.5) | Compl. | 4 |
| Chemtob et al. (2002)EMDR (3 sessions, n.r.)WL | 1715 | EMDR(individual) | Disaster | Single(1) | USA | 100 (CRI) | 68.75 | CRI | n.a. | 6–12(8.4) | Compl. | 5 |
| Chen et al. (2004)MDT (6 sessions, 60 min.)Support (ACC)WL |  | TRT+ (group), general support (individual) | Parental loss and earthquake | Multiple\*(n.r.) | China | n.r. | 68.00 | CRIES | 3 | 14.50 (0.71) | Compl. | 2 |
| Cohen et al. (2004)TF-CBT (12 sessions, 45 min.)CCT (12 sessions, 45 min.) | 8991 | TF-CBTCCT(individual, parent involvement inboth conditions) | Sexual assault | Multiple\*(4) | USA | 89 (K-SADS) | 78.82 | K-SADS | 12 | 8–14(10.7) | Compl. | 5 |
| Cohen, et al. (2005)TF-CBT (12 sessions, 45 min.)NST (12 sessions, 45 min.) | 4141 | TF-CBT(individual, parent involvement in both conditions) | Sexual assault | Multiple(n.a.) | USA | n.r. | 68.29 | TSCC | 12 | 8–15(11.4) | ITT | 6 |
| Cohen et al. (2011)TF-CBT (8 sessions, 45 min.)CCT (8 sessions, 45 min.) | 6460 | TF-CBTCCT(individual, parent involvement in both conditions) | Multiple types | Multiple(n.a.) | USA | 25 (K-SADS) | 50.81 | K-SADS | n.a. | 7–14(9.6) | ITT | 7 |
| Danielson et al. (2012)MDT (23 sessions, 60-90 min.)TAU (13 sessions, n.r.) | 1515 | RRFT(individual, parent involvementin both conditions) | Sexual assault | Multiple(n.a.) | USA | n.r. | 88.00 | UPID | 6 | 13–17(14.8) | ITT | 5 |
| Dawson et al. (2018)TF-CBT (6 sessions, 60 min.)Other (6 sessions, 60 min.) | 3232 | TF-CBT vs. PST(individual &parent involvementin both conditions) | War and Tsunami | Multiple(n.a.) | Indonesia | n.r. | 48.44 | UCLA PTSD-RI | 12 | 7-14(10.7) | ITT | 5 |
| de Roos et al. (2011)TF-CBT (4 sessions, 60 min.)EMDR (4 sessions, 60 min.) | 2119 | TF-CBT, EMDR(individual, parent involvement in both conditions) | Explosion | Single(1) | NL | 17.3 (UCLA PTSD-RI) | 44.23 | UCLA PTSD-RI | 3 | 4–18(10.1) | ITT | 6 |
| de Roos et al. (2017)EMDR (6 sessions, 45 min.)TF-CBT (6 sessions, 45 min.)WL | 434218 | EMDRCBWT(individual) | Multipletypes | Single(1) | NL | 61.2 (CRTI) | 57.28 | CRTI | 12(no WLFU) | 8-18(13.06) | ITT | 7 |
| Deblinger et al. (1996)TF-CBT-c (12 sessions, 45 min.)TF-CBT-c&p (12 sessions 90 min.)TF-CBT-p (12 sessions, 45 min.)TAU (n.r.) | 24222222 | TF-CBT(individual, child only, child & parent,parent only) | Sexual assault | Multiple(n.a.) | USA | 71 (K-SADS) | 83.00 | K-SADS | 24 | 7–13(9.8) | Compl. | 3 |
| Diehle et al. (2015)TF-CBT (12 sessions, 60 min.)EMDR (12 sessions, 60 min.) | 2325 | TF-CBTEMDR(individual, parent involvement in both conditions) | Multiple types | Single(1) | NL | 33 (CAPS-CA) | 62.50 | CAPS-CA | n.a. | 8–18(12.9) | ITT | 6 |
| Dorsey et al. (2020)TF-CBT (15 sessions, n.r.)UC (n.r., n.r.) | 9696 | TF-CBTUC(individual & group) | Parental death | Multiple(5.5) | Kenya/urban | 100 (CPSS) | 50 | CPSS | 12 | 7-13(10.7) | ITT | 7 |
| Dorsey et al. (2020)TF-CBT (15 sessions, n.r.)UC (n.r., n.r.) | 6464 | TF-CBTUC(individual & group) | Parental death | Multiple(4.5) | Kenya/rural | 100 (CPSS) | 50 | CPSS | 12 | 7-13(10.2) | ITT | 7 |
| Dorsey et al. (2020)TF-CBT (15 sessions, n.r.)UC (n.r., n.r.) | 6464 | TF-CBTUC(individual & group) | Parental death | Multiple(3.3) | Tanzania/rural | 100 (CPSS) | 50 | CPSS | 12 | 7-13(10.5) | ITT | 7 |
| Ertl et al. (2011)TF-CBT (8 sessions, 90-120 min.)SC (8 sessions, 90-120 min.)WL | 26b24b28b | KIDNET (individual) | War | Multiple\*(21.07) | Uganda | 100 (CAPS-CA) | 55.29 | CAPS-CA | 12 | 12-25 (18.0) | Compl. | 6 |
| Foa et al. (2013)TF-CBT (14 sessions, 60-90 min.)SC (14 sessions, 60-90 min.) | 3130 | PE(individual) | Sexual assault | n.r.(n.r.) | USA | 100 (CPSS-I) | 100 | CPSS-I | 12 | 13–18(15.3) | ITT | 7 |
| Ford et al. (2012)MDT (12 sessions, 50 min.)TAU (12 sessions, 50 min.) | 3326 | TARGET(individual) | Multiple types | Multiple\*(n.a.) | USA | 63 (CAPS-CA) | 100 | CAPS-CA | n.a. | 13–17(14.7) | ITT | 6 |
| Gilboa-Schechtman et al. (2010)TF-CBT (12–15 sessions, 60-90 min.)PDP (15–18 sessions, 60-90 min.) | 1919 | PE,PDP(individual) | Multiple types | Single(1) | Israel | 100 (CPSS) | 63.16 | CPSS | 17 | 12–18(14.1) | ITT | 7 |
| Goldbeck et al. (2016)TF-CBT (12 sessions, 90 min.)WL | 7683 | TF-CBT(individual,parent involvement) | Multipletypes | n.r.(6.35) | Germany | 75.5 (CAPS-CA) | 71.70 | CAPS-CA | n.a. | 7-17(13.03) | ITT | 7 |
| Gordon et al. (2008)MDT (12 sessions, 120 min.)WL | 3840 | Mind-body skills group(group) | War | Multiple\*(n.a.) | Kosovo | 100 (HTQ) | 75.61 | HTQ | n.a. | 14–18(16.3) | Compl. | 6 |
| Hitchcock et al. (2021) TF-CBT (12 sessions, n.r.)TAU (n.r., n.r.) | 1819 | CBT-3M(individual, parent involvement) | Multiple types | Single(1) | UK | 100 (DIPA, diagnosis PTSD-YC) | 51.35 | YCPC | r.b.i. | 3-8(6.26) | ITT | 6 |
| Jensen et al. (2014)TF-CBT (12-15 sessions, 45 min.)TAU (n.r.) | 5561 | TF-CBT(individual, parent involvement in bothconditions) | Multiple types | Multiple(n.a.) | Norway | 66.7 (CAPS-CA) | 79.49 | CAPS-CA (post) CPSS (FUs) | 18 | 10–18(15.1) | ITT | 7 |
| Kameoka et al. (2020)TF-CBT (12 sessions, 95 min.)WL | 14b16b | TF-CBT(individual, parent involvement) | Multiple types | n.r.(3.1) | Japan | 100 (K-SADS) | 73.3 | K-SADS | 1 | 6-18(13.9) | ITT | 6 |
| Kemp et al. (2010)EMDR (4 sessions, 60 min.)WL | 1212 | EMDR(individual) | Motor vehicle accident | Single(1) | Australia | n.r. | 44.44 | CPTS-RI | n.a. | 6–12(8.9) | Compl. | 3 |
| King et al. (2000)TF-CBT-c (20 sessions, 50 min.)TF-CBT-c&p (20 sessions, 50 min.)WL | 121212 | TF-CBT(individual, child only, child & parent involvement) | Sexual assault | Multiple\*(7.64) | Australia | 69 (ADIS) | 69.44 | ADIS | 3 | 5–17(11.5) | ITT | 4 |
| Langley et al. (2015)MDT (10 group+2-3 individual sessions, 50-60 min. + 30-50 min.)WL | 3536 | Bounce Back(individual& group,parent involvement) | Multipletypes | n.r.(4.7) | USA | n.r. | 50.00 | UPID | r.b.i. | 1st-5thgrade(7.7) | Compl. | 6 |
| Lesmana et al. (2009)Other (1 session, 30 min.)WL | 48178 | SHAT(group) | Terrorist attack | Single(1) | Indonesia | 100 (n.r.) | 52.70 | Self-developed measure based on DSM-IV-TR criteria | 24 | 9.83(1.53) | ITT | 2 |
| McMullen et al. (2013)TF-CBT (15 sessions, 45 min.)WL | 2424 | TF-CBT(group) | War | Multiple\*(14.35) | DR Congo | n.r. | 0 | UCLA PTSD-RI | n.a. | 13–17(15.8) | Compl. | 5 |
| Meentken et al. (2020)EMDR (3.5 sessions, 50 min.)CAU (n.r, n.r.) | 37b37b | EMDR(individual, parent involvement) | Multipletypes | Multiple(4.01) | NL | 100 (CAPS-CA) | 33.78 | CRTI | 2 | 4-15(9.6) | ITT | 6 |
| Meiser-Stedman et al. (2017)TF-CBT (10 sessions, 90 min.)WL | 1415 | CT(individual) | Multiple types | Single(1) | UK | 75.9 (CPTSDI) | 72.41 | CPTSDI | n.a. | 8-17(13.3) | ITT | 5 |
| Molero et al. (2019)EMDR (9 sessions, first 95 min., subsequent sessions M = 48min.)WL  | 9391 | EMDR-IGTP-OTS (group) | Multiple types | n.r.(n.r.) | Spain | n.r. | 0 | PCL-5 | 3 | 13-17(16.36) | Compl. | 5 |
| Murray et al. (2015)TF-CBT (10-16 sessions, 60-90 min.)TAU (NR) | 131126 | TF-CBT (individual) | Multiple types | Multiple\*(n.a.) | Zambia | n.r. | 50.97 | UPID | n.a. | 5-18(13.6) | ITT | 7 |
| O'Callaghan et al. (2013)TF-CBT (15 sessions, 45 min.)WL | 2428 | TF-CBT(group, parent involvement) | War and sexual assault | Multiple\*(12.1) | DR Congo | 60 (UCLAPTSD-RI) | 100 | UCLA PTSD-RI | n.a. | 12–17(16.1) | ITT | 7 |
| O'Callaghan et al. (2015)TF-CBT (9 sessions, 90 min)MDT (9 sessions, 90 min.)(WL not used becauseconvenience sample) | 2624 | TF-CBT,eclectic psychosocial intervention(group, parent involvement inboth active conditions) | War | Multiple\*(19.7) | DR Congo | 92 (UCLA PTSD-RI) | 42.00 | UCLA PTSD-RI | 6 | 8–17(14.8) | ITT | 7 |
| Osorio et al. (2018)EMDR (6 sessions, first 106 min., subsequent sessions M=53 min.)WL | 1112 | EMDR-IGTP-OTS (group) | Cancer | Single(1) | Mexiko | n.r. | 43.48 | PCL-5 | 3 | 13-21(16.71) | ITT | 6 |
| Peltonen & Kangaslampi (2019)TF-CBT (7-10 sessions, 90 min.)TAU (n.r., 45-90 min.) | 2921 | NET (individual) | Multipletypes | Multiple\*(n.a.) | Finland | n.r. | 42.00 | CRIES | r.b.i. | (13.24) | ITT | 4 |
| Pityaratstian et al. (2015)TF-CBT (3 sessions, 120 min.)WL | 1818 | TF-CBT(group) | Tsunami | Single(1) | Thailand | 100 (UCLA PTSD-RI) | 72.22 | UCLA PTSD-RI | 4 | 10-15(12.3) | ITT | 4 |
| Roque-Lopez et al. (2021)MDT (seven days)TAU (seven days) | 2222 | EMDR-IGTP-OTS (group, individual if required) | Multiple types | Multiple\*(5.25) | Colombia | n.r. | 100 | SPRINT | 2 | 13-16(14.05) | Compl. | 3 |
| Rosner et al. (2019)TF-CBT (30 sessions, 50 min.)WL | 4444 | D-CPT (individual) | Sexual assault and physical violence | Multiple(n.a.) | Germany | 100 (CAPS-CA) | 85.23 | CAPS-CA | 3 | 14-21(18.1) | ITT | 8 |
| Rossouw et al. (2020)TF-CBT (7-14 sessions, 60 min.)SC (7-14 sessions, 60 min.) | 3132 | PE, SC (individual) | Multiple types | n.r.(n.r.) | South Africa | 100 (MINI-KID) | 87.30 | CPSS-I | 6 | 13–18(15.35) | ITT | 8 |
| Ruf et al. (2010)TF-CBT (8 sessions, 90-120 min.)WL | 1313 | KIDNET(individual) | War | Multple(4.35) | Germany(refugees) | 100 (UPID) | 46.15 | UPID | 6 | 7–16(11.5) | ITT | 5 |
| Santiago et al. (2018)MDT (10 group +2 individual sessions, 50-60 min + 30-50min.)WL | 2527 | Bounce Back (group and individual, parent involvement) | MultipleTypes | Multiple\*(6.9) | USA | n.r. | 36.54 | UCLA PTSD-RI | 3 | 1st-4th grade (7.76) | ITT | 5 |
| Schauer (2008)TF-CBT (6 sessions, 60-90 min.)Meditation (6 sessions, 60-90 min.) | 2522 | KIDNETMeditation(individual) | War | Multiple\*(n.a.) | Sri Lanka | 100 (CAPS-CA) | 61.70 | CAPS-CA | 5 | 11-15(13.1) | ITT | 7 |
| Scheeringa et al. (2011)TF-CBT (12 sessions, 45 min.)WL | 2011 | CBT (individual, parent involvement) | Multiple types | n.r.(n.r.) | USA | 24 (PAPA) | 33.80 | PAPA | r.b.i. | 3–6(5.3) | Compl. | 3 |
| Schottelkorb et al. (2012)TF-CBT (12-20 sessions, 90 min.)CCPT (24 sessions, 30 min.) | 1214 | TF-CBTCCPT(individual,parent involvement in both conditions) | War | Multiple(n.a.) | USA(refugees) | 58 (UPID) | 45.20 | UPID | n.a. | 6-13(9.1) | Compl. | 4 |
| Shechtman & Mor (2010) Other (10 sessions, n.r.)WL | 8452 | ESGI(group) | War and parentalloss | n.r.(n.r.) | Israel | n.r. (CPTS-RI) | 68.00 | CPTS-RI | n.a. | 9-14 | Compl. | 5 |
| Shein-Szydlo et al. (2016)TF-CBT (12 sessions, 60 min.)WL | 5049 | CBT-TSC(individual) | Multipletypes | Multiple(n.a.) | Mexico | 100 (DISC) | 63.64 | CPSS | r.b.i. | 12-19(14.9) | ITT | 7 |
| Sloan et al. (2011)TF-CBT (3 sessions, 20 min.)Neutral Writing (3 sessions, 20 min.) | 21b21b | Written Exposure Therapy (individual) | MultipleTypes | n.r.(n.r.) | USA | 100 (PSS-I) | n.r. | PSS-I | 1 | 18.90 (1.10) | Compl. | 5 |
| Smith et al. (2007)TF-CBT (10 sessions, n.r.)WL | 1212 | TF-CBT(individual, parent involvement) | Multiple types | Single(1) | UK | 100 (CAPS-CA) | 39.47 | CAPS-CA | n.a. | 8–18(13.8) | ITT | 7 |
| Stein et al. (2003)TF-CBT (10 sessions, 60 min.)WL | 5463 | TF-CBT(group) | Multiple types | n.r.(8.75) | USA | n.r. | 56.35 | CPSS | n.a. | 6th grade (11.0) | Compl. | 6 |
| Trowell et al. (2002)Other (30 sessions, 50 min.)Psychoeducation (18 sessions, n.r.) | 2828 | PDP (individual)Psychoeducation (group) | Sexual assault | Multiple(n.a.) | UK | n.r. | 100 | K-SADS | 24 | 6–14(10.0) | Compl. | 4 |

*Note*: ACC = Active Control Condition; AD = Aerobic Dance control group; ADIS = Anxiety Disorders Interview Schedule; CAPS-CA = Clinician Administered PTSD Scale for Children and Adolescents; CBT = Cognitive Behavior Therapy; CBT-TSC = CBT for trauma in street children; CBT-3M = Cognitive Behavior Therapy – 3 M; CCPT = Child Centered Play Therapy; CCT = Child Centered Therapy; CITES-R = Children's Impact of Traumatic Events Scales-Revised; Compl.= completer analysis; CPSS = Child PTSD Symptom Scale; CPSS-I = CPSS Interview version; CPT = Cognitive Processing Therapy; CPTS-RI = Child Post-Traumatic Stress - Reaction Index; CPTSDI = Child PTSD Inventory; CRI = Child Reaction Index; CRIES = Children's Revised Impact of Event Scale; CRTI = Children’s Responses to Trauma Inventory; CT = Cognitive Therapy; D-CPT = Developmentally adapted Cognitive Processing Therapy; DICA = Diagnostic Interview for Children and Adolescents; DISC = Diagnostic Interview Schedule for Children; DR Congo = Democratic Republic of Congo; EFT = Emotional Freedom Techniques; EMDR = Eye Movement Desensitization and Reprocessing; EMDR-IGTP-OTS = EMDR-Integrative Group Treatment Protocol for Ongoing Traumatic Stress; ESGI = Expressive Supportive Group Intervention; freq = frequency; FU = Follow-Up; HTQ = Harvard Trauma Questionnaire; ITT = intent-to-treat analysis; K-SADS = Schedule for Affective Disorders and Schizophrenia for School-Age Children; KIDNET = Narrative Exposure Therapy for Children; MDT = Multidisciplinary Treatment; MINI-KID = Mini International Neuropsychiatric Interview for Children and Adolescents; n.a. = not applicable/no follow-up assessment reported; NET = Narrative Exposure Therapy; NL = the Netherlands; n.r. = not reported (i.e., either not reported at all or not reported in sufficient detail); NST = Non-directive Supportive Therapy; Other = Other psychological intervention (i.e., non-TF-CBT, non-EMDR, & non-MDT); PAPA = The Preschool Age Psychiatric Assessment; PE = Prolonged Exposure; PDP = Psychodynamic Psychotherapy; PSS-SR = PTSD Symptom Scale, PST = Problem Solving Therapy; Self-Report; PTSD = Post-Traumatic Stress Disorder; PTSS-C = Posttraumatic Stress Symptoms Scale for Children; r.b.i. = reported but irrelevant (i.e., irrelevant as no meaningful comparison possible at follow-up due to crossover-design/delayed treatment control, due to subgroup n < 10 or due to incomplete data reporting); RRFT = Risk Reduction through Family Therapy; SC = Supportive Counselling; SF-AT = Solution-Focused Art Therapy; SPTSS = Scale of Posttraumatic Stress Symptoms; TARGET = Trauma Affect Regulation: Guide for Education and Therapy; TAU = Treatment as Usual; TF-CBT = Trauma-focused Cognitive Behavior Therapy; TF-CBT-c = TF-CBT for child only; TF-CBT-c&p = TF-CBT for child and parent; TF-CBT-p = TF-CBT for parent only; TRT = Teaching Recovery Techniques; TRT+ = Teaching Recovery Techniques including TF-CBT and EMDR techniques; TSCC = Trauma Symptom Checklist for Children; UCLA PTSD-RI = University of California–Los Angeles PTSD Reaction Index; UK = United Kingdom; UPID = The University of California at Los Angeles PTSD Index; USA = United States of America; WL = Waitlist; YRI = Youth Readiness Intervention. References of included trials can be found in the Appendix.
aDiagnostic interviews took place three weeks after a tsunami. Hence, a subgroup of participants did not meet the 4-weeks PTSD time criterion at baseline.
bSince only FU was assessed, FU one groups sizes are reported.
\*Indicates that all included participants had experienced multiple trauma exposures. That is, the given trial was included in the sensitivity analysis comparing trials with ≥ 90% multiple trauma to 100% single trauma trials.

**Appendix D. References of included trials**

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**Appendix E. Trial quality of included trials**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trial / reference | Q1 – 100% PTSD rate at baseline | Q2 -manual-based treatment | Q3 – therapists trained in manual | Q4 -integrity/ manual adherence checked | Q5 – intent-to-treat (ITT) results reported | Q6 –N > 50 | Q7 -independent randomization | Q8 - blinded outcome assessment | Q sum score (out of 8) |
| Ahmad et al. (2007) | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| Ahrens & Rexford (2002) | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 3 |
| Al-Hadethe et al. (2015)  | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Auslander et al. (2017) | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 5 |
| Auslander et al. (2020) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 6 |
| Barron et al. (2016) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Barron et al. (2020) | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 5 |
| Carrion et al. (2013) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Catani et al. (2009) | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| Catani et al. (2009) | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| Celano et al. (1996) | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 4 |
| Chemtob et al. (2002) | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 5 |
| Chen et al. (2014) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| Cohen et al. (2004) | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 5 |
| Cohen et al. (2005) | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 6 |
| Cohen et al. (2011) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Danielson et al. (2012) | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 5 |
| Dawson et al. (2018) | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 5 |
| de Roos et al. (2011) | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| de Roos et al. (2017) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Deblinger et al. (1996) | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| Diehle et al. (2015) | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| Dorsey et al. (2020)  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Ertl et al. (2011) | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 6 |
| Foa et al. (2013) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Ford et al. (2012) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 6 |
| Gilboa-Schechtman et al. (2010) | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Goldbeck et al. (2016) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Gordon et al. (2008) | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 6 |
| Hitchcock et al. (2021) study 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Jensen et al. (2014) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Kameoka et al. (2020) | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| Kemp et al. (2010) | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| King et al. (2000) | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 4 |
| Langley et al. (2015) | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 6 |
| Lesmana et al. (2009) | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| McMullen et al. (2013) | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 5 |
| Meentken et al. (2020) | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 6 |
| Meiser-Stedman et al. (2017) | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 5 |
| Molero et al. (2019) | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 5 |
| Murray et al. (2015) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| O'Callaghan et al. (2013) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| O'Callaghan et al. (2015) | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Osorio et al. (2018) | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| Peltonen et al. (2019) | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 4 |
| Pityaratstian et al. (2015) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 4 |
| Roque-Lopez et al. (2021) | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 3 |
| Rosner et al. (2019) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Rossouw et al. (2020) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| Ruf et al. (2010) | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 5 |
| Santiago et al. (2018) | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 5 |
| Schauer (2008) | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Scheeringa et al. (2011) | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 3 |
| Schottelkorb et al. (2012) | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 4 |
| Shechtman & Mor (2010) | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 5 |
| Shein-Szydlo et al. (2016) | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 7 |
| Sloan et al. (2011)  | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 5 |
| Smith et al. (2007) | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Stein et al. (2003) | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 6 |
| Trowell et al. (2002) | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 4 |

**Appendix F. Forest plot depicting the efficacy of trauma-focused cognitive behavior therapy vs. passive control conditions at treatment endpoint in samples exposed to a single trauma (top) or multiple traumas (bottom)**





Abbreviations. NET = Narrative Exposure Therapy; TF-CBT-c&p = Trauma-focused cognitive behavior therapy treatment arm with parent involvement; WL = Waitlist control condition. Note that square brackets behind the reference indicate that the given trial had more than two relevant arms. Brackets contain the extracted (primary) comparison. Other comparisons were neglected to avoid data dependencies.

**Appendix G. Forest plots depicting the efficacy of trauma-focused cognitive behavior therapy vs. other psychological interventions at treatment endpoint in samples exposed to a single trauma (top) or multiple traumas (bottom)**





Abbreviations. CCPT = Child Centered Play Therapy; CCT = Child Centered Therapy; EFT = Emotional Freedom Techniques; KIDNET = Narrative Exposure Therapy for refugee children (specialized treatment protocol); MDT = Multi-Disciplinary Treatment; NET = Narrative Exposure Therapy; NST = Non-directive Supportive Therapy; PST = Problem Solving Therapy; TF-CBT = Trauma-focused cognitive behavior therapy treatment; TLDT = Time Limited Dynamic Therapy.

**Appendix H.** **Sensitivity analysis1: Efficacy of psychological interventions for pediatric PTSD for single vs. multiple trauma trials at posttreatment**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Comparison** | ***Single vs. multiple (trauma) exposures***  | ***k*** | ***g*** | **95% CI****(PI)** | ***I*²** | **NNT** | ***Moderation test, p*** |
| All interventions vs. passive control conditions | single | 8 | **1.09\*\*\*** | **0.70 – 1.48(0.20 – 1.98)** | 52.88\* | 1.79 | .768 |
| multiple | 9 | 1.19\*\*\* | 0.75 – 1.64(-0.05 – 2.44) | 80.70\*\*\* | 1.66 |
| All interventions vs. active control conditions | single | n.a. (*k* = 1) | n.a. |
| multiple | 8 | 0.49\*\* | 0.12 – 0.85(-0.43 – 1.41) | 75.72\*\*\* | 3.71 |
| TF-CBT vs. passive control conditions | single | 5 | 1.10\*\*\* | 0.54 – 1.66(-0.06 – 2.26) | 65.99\* | 1.78 | .667 |
| multiple | 6 | 1.32\*\*\* | 0.67 – 1.96(-0.26 – 2.89) | 86.24\*\*\* | 1.54 |
| TF-CBT vs. active control conditions | single | n.a. (*k* = 1) | n.a. |
| multiple | 5 | 0.53\*\* | 0.13 – 0.93(-0.30 – 1.37) | 75.10\*\*\* | 3.41 |
| EMDR vs. passive control conditions | single | 4 | **1.11\*\*\*** | **0.72 – 1.50(0.65 – 1.58)** | 9.99 | 1.76 | n.a. |
| multiple | n.a. (*k* = 0) |
| TF-CBT vs. other psychological interventions (EMDR, MDTs) | single | 4 | 0.03 | -0.28 – 0.33(-0.39 – 0.45) | 22.38 | 63.53 | .772 |
| multiple | 5 | 0.20 | -0.58 – 0.97(-1.62 – 2.01) | 90.41\*\*\* | 9.04 |

Abbreviations. ACC = Active Control Conditions; EMDR = Eye Movement Desensitization and Reprocessing; *k* = number of trials included in the analysis for the given comparison; MDT = Multi-Disciplinary Treatments (i.e., involving a mixture of techniques from at least two families such as TF-CBT techniques + EMDR techniques); n.a. = not applicable (i.e., number of trials too small [k < 4] to conduct analysis); PCC = Passive Control Conditions; PI = Prediction Interval; TF-CBT = Trauma-focused Cognitive Behavioral Therapy;. *p*-values refer to the statistical significance level of the respective analyzed moderator. **Bold** font indicates that the CI as well as the PI exclude the null highlighting large certainty in the respective efficacy.
1More conservative definition applied for *multiple trauma trial* (i.e., ≥ 90% of sample reported exposure to ≥ 2 traumas rather than ≥ 50 % in the main analysis).
\* *p* < 0.05; \*\* *p* < 0.01; \*\*\* *p* < 0.001

**Appendix I. Long-term efficacy of psychological interventions for pediatric PTSD in samples exposed to a single trauma vs. multiple traumas**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Comparison** | ***Follow up time*** | ***Single vs. multiple (trauma) exposure***  | ***k*** | ***g*** | **95% CI****(PI)** | ***I*²** | **NNT** | **Moderator test, p** |
| All interventions vs. passive control conditions | FU1 | single | n.a. (*k* = 2) | n.a. |
| multiple | 6 | 0.67\*\* | 0.22 – 1.11(-0.30 – 1.64) | 65.15\* | 2.76 |
|  | FU2 |  | n.a. (*k* = 0) | n.a. |
|  |  | n.a. (*k* = 2) |
| All interventions vs. active control conditions | FU1 | single | n.a. (*k* = 1) | n.a. |
| multiple | 6 | 0.28 | -0.11 – 0.66(-0.55 – 1.10) | 66.36\* | 6.48 |
|  | FU2 | single | n.a. (*k* = 0) | n.a. |
|  | multiple | 6 | 0.49\*\*\* | 0.20 – 0.78(-0.04 – 1.03) | 41.80 | 3.67 |
| TF-CBT vs. passive control conditions | FU1 | single | n.a. (*k* = 1) | n.a. |
| multiple | 5 | 0.45\* | 0.08 – 0.81(-0.19 – 1.08) | 41.35 | 4.04 |
|  | FU2 |  | n.a. (*k* = 0) | n.a. |
|  |  | n.a. (*k* = 2) |
| TF-CBT vs. active control conditions | FU1 | single | n.a. (*ks* < 4) | n.a. |
| multiple |
|  | FU2 |  | n.a. (*k* = 0) | n.a. |
|  |  | 4 | 0.58\*\* | 0.22 – 0.94(-0.05 – 1.21) | 51.32 | 3.15 |
| EMDR vs. passive control conditions | FU1 & FU2 | single | n.a. (*ks* < 4) | n.a. |
| multiple |
| TF-CBT vs. other psychological interventions (EMDR, MDTs) | FU1 | single | n.a. (*k* = 2) | n.a. |
| multiple | n.a. (*k* = 2) |
|  | FU2 | single | n.a. (*k* = 2) | n.a. |
|  | multiple | 5 | -0.05 | -0.46 – 0.37(-0.92 – 0.83) | 70.58\* | -37.72 |

Abbreviations. ACC = Active Control Conditions; EMDR = Eye Movement Desensitization and Reprocessing; FU1 = Follow-Up 1 (i.e., follow-up assessments ≤ 5 months after treatment completion and in case of multiple assessments the closest one to 5 months); FU2 = Follow-Up 2 (i.e., follow-up assessments > 5 months after treatment completion and in case of multiple assessments the longest assessment); *k* = number of trials included in the analysis for the given comparison; MDT = Multi-Disciplinary Treatments (i.e., involving a mixture of techniques from at least two families such as TF-CBT techniques + EMDR techniques); n.a. = not applicable (i.e., number of trials too small [k < 4] to conduct analysis); PCC = Passive Control Conditions; PI = Prediction Interval; TF-CBT = Trauma-focused Cognitive Behavioral Therapy;. *p*-values refer to the statistical significance level of the respective analyzed moderator.
\* *p* < 0.05; \*\* *p* < 0.01; \*\*\* *p* < 0.001

**Appendix J. Trial quality as a potential moderator of short-term efficacy of psychological interventions for pediatric PTSD in samples exposed to a single trauma vs. multiple traumas**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Single vs. multiple trauma -****comparison** | ***Analyzed potential moderator*** | ***k*** | ***b*** | ***I*²** | ***p*** |
|  **EFFICACY AT POSTTREATMENT** |
| Single trauma - psychological interventions vs. passive control conditions | Trial quality | n.a. (*k* = 8) |
|
|
|
|  **EFFICACY AT POSTTREATMENT** |
| Multiple traumas - psychological interventions vs. passive control conditions | Trial quality | 12 | 0.05 | 81.60\*\*\* | .636 |
|
|
|  **EFFICACY AT POSTTREATMENT** |
| Single trauma - psychological interventions vs. active control conditions | Trial quality | n.a. (*k* = 1) |
|
|
|
|  **EFFICACY AT POSTTREATMENT** |
| Multiple traumas - psychological interventions vs. active control conditions | Trial quality | 14 | 0.02 | 77.95\*\*\* | .818 |
|
|

Abbreviations. *k* = number of trials included in the analysis for the given comparison; n.a. = not applicable (i.e., number of trials too small (k < 10) to conduct analysis). *p*-values refer to the statistical significance level of the respective analyzed moderator. Note that FU results are not listed since k < 10 for all analyses. Note that meta-regressions for follow-up data was too scarce (k < 10) to warrant analyses.
\* *p* < 0.05; \*\* *p* < 0.01; \*\*\* *p* < 0.001